R E P O R T R E S U M E S

ED 014 628 AC 001 380

A READABILITY ANALYSIS OF RANDOMLY SELECTED BASIC EDUCATION AND VOCATIONAL EDUCATION CURRICULUM MATERIALS USED AT THE ATTERBURY JOB CORPS CENTER AS MEASURED BY THE GUNNING FOG INDEX.

BY- LONDONER, CARROLL A.
INDIANA UNIV., BLOOMINGTON, SCH. OF EDUCATION

PUB DATE JAN 67

EDRS PRICE MF-$0.25 HC-$1.16 27P.

DESCRIPTORS- *READABILITY, *INSTRUCTIONAL MATERIALS, *ADULT BASIC EDUCATION, *ADULT VOCATIONAL EDUCATION, *READING MATERIALS, READING DIFFICULTY, READING COMPREHENSION, STRUCTURAL ANALYSIS, READING LEVEL, READING ABILITY, READING RESEARCH, SENTENCE STRUCTURE, SYLLABLES, GRADE 4, GRADE 5, GRADE 6, JOB CORPS, GUNNING FOG INDEX,

A STUDY WAS MADE OF THE READABILITY LEVELS OF CURRICULUM MATERIALS USED IN THE BASIC AND THE VOCATIONAL EDUCATION PROGRAMS AT THE ATTERBURY JOB CORPS CENTER IN INDIANA. THE GUNNING FOG INDEX WAS USED TO MEASURE STYLE OF DIFFICULTY AS CREATED BY LENGTHY SENTENCES AND POLYSYLLABIC WORDS. THIS IS HIGHLY CORRELATED TO THE LEVEL OF SCHOOL GRADE ATTAINED BY THE READER. FIVE JOB SHEETS USED IN THE VOCATIONAL COURSES IN HEATING AND REFRIGERATION INSTALLATION AND RANDOM SAMPLINGS OF "SUCCESS IN LANGUAGE/A" AND "THE MONEY YOU SPEND" USED IN THE BASIC EDUCATION PROGRAM WERE ANALYZED. THE JOB SHEETS TESTED APPROXIMATELY AT THE FIFTH GRADE LEVEL. "SUCCESS IN LANGUAGE/A" TESTED AT THE SIXTH GRADE LEVEL, AND "THE MONEY YOU SPEND," AT FOURTH GRADE. CORPSMEN HAVING ATTAINED FIFTH OR SIXTH GRADE SCHOOL LEVELS OF READING SHOULD BE ABLE TO HANDLE THE MATERIAL. (STATISTICAL TABLES AND A BIBLIOGRAPHY ARE INCLUDED.) (RT)

ED014628

A READABILITY ANALYSIS OF RANDOMLY SELECTED BASIC EDUCATION AND VOCATIONAL EDUCATION CURRICULUM MATERIALS USED AT THE ATTERBURY JOB CORPS CENTER AS MEASURED BY THE GUNNING FOG INDEX

BY

CARROLL A. LONDONER

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

D515, Adult Literacy and Fundamental Education
School of Education
Indiana University
January, 1967

AC001 380

LIST OF TABLES

Table		Page
1.	Readability Levels as Measured By The Fog Index	6
2.	Fog Index Rating As Related To The Educational Level Obtained By The Average Citizen in The United States	7
3.	Readability Analysis of Success in Language/A, Unit 3, "As A Matter of Fact"	13
4.	Readability Analysis for The Money You Spend	15
5.	Readability Analysis for Job Sheets	16
6.	Readability Analysis Summary of Success in Language/A, The Money You Spend, and Job Sheets in Mean Score Measures	17

TABLE OF CONTENTS

Section		Page
1.	Introduction	1
2.	Research Method	9
3.	Results	12
4.	Conclusions	18
5.	Bibliography	23
6.	Appendix	25
	Appendix A: Sample Job Sheet Used in The Readability Analysis	26

A READABILITY ANALYSIS OF RANDOMLY SELECTED BASIC EDUCATION AND VOCATIONAL EDUCATION CURRICULUM MATERIALS USED AT THE ATTERBURY JOB CORPS CENTER AS MEASURED BY THE GUNNING FOG INDEX

by

Carroll A. Londoner

Introduction

In recent years the United States Government has taken an active part in helping to overcome basic education deficiencies in many of the adults in this country. Congress has passed far reaching legislation to combat this educational blight in our nation. One of the most important acts of Congress was the Economic Opportunity Act of 1964 which established the now famous "war on poverty."[1] This legislation provides funds in seven areas including the establishment of the Job Corps for young men and women, urban and rural community action programs to combat poverty, special programs to aid migrants and the seasonally employed, employment and investment incentives, and work experience programs. Title 11B of the Urban and Rural Community Action program provides the most direct aid for literacy training and basic education. Moreover, Title 11B defines adult basic education as:

> ". . . elementary level education for adults with emphasis on the communication and computational skills such as reading, writing, speaking, listening, and arithmetic; and using as content for teaching these skills such adult experiences as consumer buying practices, health habits, relations with other members of the family and community, homemaking, and citizenship responsibilities."[2]

---

1. U.S. 88th Congress, Second Session. S.2642
2. U.S. 88th Congress, Second Session. "REGULATIONS applicable to the administration of Title II, Part B of OEA, 1964.

Because we have been spending federal money to upgrade the educationally deficient persons in our society a natural question has arisen concerning appropriate curriculum materials for these adults. The United States Department of Health, Education and Welfare, Office of Education made a survey in 1964 of more than 500 different types of commerically produced materials. They reported that the existing materials did not fit the general characteristics of the groups for which they were being used. In particular they found that the reading level of the materials was too high, often by two or three grade levels. Moreover, they found the tone or approach in writing was childish; the language skills and basic word attach skills needed by functionally illiterate adults were not being taught; writing and arithmetic with other subject matter in functional context was lacking.[3]

The major concern in this research has been to establish as far as possible the readability levels of curriculm materials being used in both the basic education program and the vocational educational program at the Atterbury Job Corps Center. This becomes an imperative in the educational program before adequate evaluation can take place. If a corpsman is encountering material far beyond, or even slightly beyond his present reading ability he may become discouraged and consider himself a failure. Moreover, a corpsman's ability to read the job sheet specifications are vitally important to his learning a useful vocation during the time he is at the Center. To the extent that a corpsman

---

3. U.S. Department of Health, Education, and Welfare, Office of Education. Report of the task force on adult basic education instructional materials and related media.

can read these materials and comprehend them easily he will experience a sense of accomplishment. If he is unable to achieve this basic sense of accomplishment he will consider himself a failure in his vocational program. If these materials are easy to read the corpsman will have a greater chance of accomplishing his goal of gaining a minimum education and simultaneously learning a useful vocation.

In the light of the above considerations the problem of this study was to discover the readability level of both basic education curriculum materials and vocational education curriculum materials. Specifically, the study attempted to answer the following questions:

1. What is the readability level of The Money You Spend, from the Turner-Livingston Reading Series as measured by the Gunning Fog Index.

2. What is the readability level of Success in Language Unit 3, "As A Matter of Fact," from the Follett Basic Learnings Program--English, as measured by the Gunning Fog Index.

3. What is the readability level of job sheets presently being used in the Refrigeration installation and repair skills vocational program and the Heating installation and service skills vocational program as measured by the Gunning Fog Index?

This study was limited to an analysis of the readability level of the style of writing designed for the consumption of the Job Corpsmen at the Atterbury Job Corps Center in Indiana. It was divided into two major areas: the analysis of reading materials from the basic education program and the analysis

of reading materials from the vocational education program.

Specifically the materials tested were the following:

Success in Language/A, "Unit 3, As A Matter of Fact," The Follett Basic Learnings Program--English, 1964, Follett Publishing Company, Chicago, pp. 118, 119, 135, 136, 137, 157, 158.

The Money You Spend, The Turner-Livingston Reading Series, 1962, Follett Publishing Company in cooperation with New York University Press, pp. 2, 26, 46.

Job Sheet, 960.1.J.S.75, from the Heating installation and service skills vocational program.

Job Sheet, 960.1.J.S.76, from the Heating installation and service skills vocational program.

Job Sheet, 950.3.J.S.2, from the Refrigeration Installation and repair skills vocational program.

Job Sheet, 950.3.J.S.5, from the Refrigeration Installation and repair skills vocational program.

Job Sheet, 950.3.J.S.6, from the Refrigeration Installation and repair skills vocational program.

As this research was concerned with the application of a readability formula to the above curriculum materials it was necessary to arrive at a working definition of a readability formula. The one arrived at and which was applied throughout the study is as follows: a readability formula is a measuring instrument intended to predict the readability level of a style of writing. It must provide quantitative, objective estimates of the difficulty of a piece of writing. It must yield these results over a wide variety of adult materials rather than being limited to a few select school grades.

No attempt was made to try and measure the level of abstraction nor the difficulty of ideas in as much as no known formula has proven valid in measuring these factors.

The Gunning Fog Index Readability formula was used as the measuring instrument on these curriculum materials. This formula is based upon two factors, the average sentence length and the length of individual words. In developing this formula Gunning believed that the percentage of hard words in written materials was an important factor in readability. He computed words of three or more syllables calling this the pollysyllabic count. He believed that word length was closely related to "familiarity" of the word and the "abstractness" of the word. Longer words tended to be less familiar to readers and at the same time seemed to become less concrete, and less related to the life of the reader.

Over a period of years as a readability specialist and consultant to various mass media people, Gunning developed his conception of "foggy thinking." Foggy thinking on the reader's part comes about because the writer of the material uses too lengthy sentences and too many pollysyllabic words. Consequently, "foggy thinking" comes about, not because the reader is unable to cope with the ideas, but because the author wrote in "foggy" language. By developing his "Fog Index" Gunning is able to indicate the degree of foggy language which obscures the author's thoughts and intentions and simultaneously obscures the reader's comprehension. In applying this concept of the Fog Index over a period of seven years to successful pulp magazines Gunning perceived that this Index approximated the last grade in school which had been completed. Thus, if a piece of written material

was computed at a number such as "12" this implied that the reading level needed or required to understand the material was grade twelve.

Table 1. suggests the relationship between the Fog Index, the readability level by school grade and the readability level in relationship to popular magazines in circulation. It can be seen that Gunning's Fog Index is an approximation very close to that of the actual grade level last completed by a person. Thus a Fog Index of "17" is indicative of a college graduate's reading level; a Fog Index of "12" is indicative of a person having completed the 12th grade or at least having the ability to read at the 12th grade level. Gunning has also sshown that there is no "popular" magazine, written for the mass audience in the United States that is ever written at this level. Indeed, it is not until the lower grades of high school are approached that one finds the popular pulp magazines. Gunning also warns there is a "danger line" of "foggy thinking" when an author goes beyond the 12th grade level of readability.

TABLE 1. READABILITY LEVELS AS MEASURED BY THE FOG INDEX

Difficulty of Readability Level	Fog Index	Reading Level	
		By Grade	By Magazine
Scientific	17	College Graduate	
	16	College Senior	No Popular
Readability	15	College Junior	Magazine
	14	College Soph.	This Hard
Range	13	College Fresh.	
	D A N G E R L I N E		
Medium Difficulty Readability Range	12	High School Sr.	Atlantic Monthly
	11	High School Jr.	Harpers
Easy	10	High School Soph.	Time
Readability	9	High School Fresh.	Readers
Range	8	Jr. High School	Digest

Table 2, suggests the relationship between the Fog Index rating of a piece of written material and the per cent of adults in the United States having obtained the level of education necessary to understand this piece of writing. The data for this table comes from a comparison of the 1950 and 1960 Census of Population. This table points out clearly why Gunning said there was a "danger line" when a piece of material was written beyond the 12th grade level of readability. In our culture approximately 33 per cent of the adult population has obtained the 11th and 12th grades, and 67 per cent have not. When a piece of written material is written beyond that level of attainment a drastic change is noticable. Only 5 per cent of the adult population has obtained this grade level of proficiency to read and understand at this level of readability.

TABLE 2. FOG INDEX RATING AS RELATED TO THE EDUCATIONAL LEVEL OBTAINED BY THE AVERAGE CITIZEN IN THE UNITED STATES

Fog Index Rating	Equivalent Grade Obtainment	Percentage of Adults	
		With This Education	Without This Education
17	College Graduate	5	95
16	College Senior	5	95
15	College Junior	5	95
14	College Sophomore	5	95
13	College Freshman	5	95
	D A N G E R L I N E		
12	High School Senior	33	67
11	High School Junior	33	67
10	High School Sophomore	54	46
9	High School Freshman	54	46
8	Eighth Grade	83	17
7	Seventh Grade	83	17
6	Sixth Grade	88	12

It is immediately apparent that a writer consciously writing above the 12th grade level is writing to a very small group of adult citizens in the United States. Since magazines in the mass-media field are generally interested in a quantity of readers rather than a select few, it is evident, as shown by Gunning's Fog Index that material ought to be written somewhere in the high school level of readability. To be more specific, the 1960 census indicates that the average adult citizen in the United States over the age of 25, has completed 10.6 grades or the equivalent of the 11th grade. This is an improvement of one full grade level over the 1950 census where the average grade obtained was 9.3. But in spite of the improvement we are losing ground. The 1960 census also recorded the fact that nearly 8½ million adults 25 years of age and older had less than five years of schooling and were by definition functionally illiterate. It is of great importance to this study that a federal program has been made available for those persons desiring to help themselves. But in order to do so the materials they read at the Job Corps center must be at their present readability level. Moreover, a teacher may have many persons of varying degrees of reading ability in his class. He must know at what level the corpsman can presently read and then be able to assign him material that is correlated to his reading ability. Thus it is imperative for the classroom teacher of adults to know how to quickly apply a readability formula to his material and ascertain its readability level.

Research Method

The purpose of this study was to ascertain the readability levels of curriculum materials used in both the basic education program and the vocational educational program at the Atterbury Job Corps Center, as measured by the Gunning Fog Index. The study measured written materials from curriculum designed to enhance the adults' reading skills in the basic education program. It also measured written Job Sheet materials in the vocational education program at the Center.

Each reading book was examined separately and the data were recorded on tables designed to include relevant and reliable information on readability measurement. Each Job Sheet was examined separately and also recorded on tables designed to give evidence of readability measurement.

Sampling. Random samples were taken from each of the readers in order to avoid any bias on the part of the researcher. A consistent schematic plan was used in picking the samples. In one reader, Success in Language/A, samples were chosen from the beginning, the middle and the end of the reader. Furthermore, since these were long reading lessons, samples were taken from the introduction, the middle of the writing, and the conclusion of the writing. Thus, there were three samples with each sample being broken down into three parts. In the second reader, The Money You Spend, the articles were much shorter. Consequently the entire reading was sampled. As such, there are only three samples from this reader: one from the beginning, the middle, and the end of the reader.

Because the Job Sheets were very short each was fully counted and was thought of as a true parameter and indication of its readability level.

The samples consisted of 100 words. Each sample started at the beginning of a paragraph.

Word Count. Each word in the sample was counted consecutively up to 100 words. If the next closest sentence ending with a period was past the 100 word mark then those extra words were added to the word count. If the next closest sentence ending with a period was before the completed 100 word count then only the exact amount of words was used in the sample. Consequently, some samples might only have 96 words because the closest sentence ending with a period came before the full 100 word count. Some samples might have had 110 words because the closest sentence ending with a period came after the full 100 word count.

A word was considered as any or all letters, numbers, and symbols on a printed page within the 100 word count. Thus, "300," "$50.00," "several" were all counted as single words.

Average Sentence Length Measurement. To get the Mean sentence length for each sample taken, the total number of words in the passage was divided by the "number of sentences" contained within the word count. This resulted in the average sentence length of the passage.

Pollysyllabic Count. All "hard-words" (the number of three or more syllable words) within a passage of 100 words were counted.

Certain words were not counted because they were not genuine three syllables, but were artificial. These words were: words which were capatilized; combinations of short, easy words, e.g., "bookkeeper," "butterfly;" and verb forms made into three or more syllables by adding "-ed," or "-es." Thus, words such as "Supreme Court," "tresspasses," and "pronounced," would not be counted because they were either capatilized, or had been made into three syllables by changing the verb form. The percentage of hard words was arrived at by placing the number of hard words over the number of words in the word count, thus making a common fraction. The denominator was then divided into the numerator to get the percentage.

Fog Index Rating. Both the total for the average sentence length and hard-word percentage were added together. Their sum was then multiplied by .4, (the "constant" arrived at by Gunning when applying regression equations to his variables). The result of this multiplication and proper rounding off, is the Fog Index Rating. The Fog Index Rating is approximately equivalent to the last grade completed, or the grade required to read the written material. An example of the process would be:

22.....Average sentence length (arrived at by dividing number of sentences into the word count).

6.....Percentage of pollysyllables

28.....Sum of the two factors

x 4.....Gunning's formula constant

11.2.....Fog Index Rating

11.2 = 11th Grade level of Readability.

Results

An analysis for each reader and each Job Sheet was made according to the following criteria: (1) deductions from the Gunning Fog Index Rating for the samples; (2) an explanation for the Index rating.

The Readability Analysis for Success in Language/A Unit 3 "As a Matter of Fact"

Table 3, presents the data on the readability level of the samples taken for Success in Language/A. This particular sampling distribution has nine samples. It represents three different stories with a sample taken from the Introduction (I), the Middle of the story (M), and the Conclusion of the story (C).

The data reveals that the Mean sentence length for the samples tested was 15.3 words in length. The Mean percentage of pollysysllabic words was 4.1 per 100 word count. The Mean Fog Index Rating was 6.4 which approximates the 6th grade level of readability.

This reader for adults thus qualifies for the following description as evidenced from the data: (1) It is written within an easy readability range for elementary school grades (cf. Table 1, page 6). (2) It is written in an easy style. (3) It is written so that the majority of adults in our culture could read and understand this material; (4) 88 per cent of our nation's population would be able to read this material intelligently and 12 per cent could not. These deductions would hold true for the rest of the reader if the samples are truly representative of the entire reader.

TABLE 3. READABILITY ANALYSIS OF SUCCESS IN LANGUAGE/A UNIT 3 "AS A MATTER OF FACT"

Sample Number and Page	Reading Level by Grade	Sentence Length	Per cent of Hard words	Fog Index	Percentage of Adults With this Education	Percentage of Adults Without this Education
1(118)I*	6	12.3	6.3	5.9	88	12
1(118)M*	6	15.8	4.8	6.3	88	12
1(119)C*	6	14.7	6.8	5.9	88	12
2(135)I	6	13.6	2.7	5.5	88	12
2(136)M	8	19.2	4.3	7.7	83	17
2(137)C	9	21.6	4.6	8.7	54	46
3(157)I	6	15.0	5.7	6.2	88	12
3(157)M	7	16.4	4.3	6.6	83	17
3(158)C	4	9.1	2.0	3.6	92	8
Mean	6.33	15.3	4.1	6.4	84	16

*I = Introduction to Story
*M = Middle section of the Story
*C = Conclusion of the Story

What are the reasons for this low Fog Index rating of Readability? Short sentences and a minimum percentage of words of three or more syllables has kept this readability level down to the elementary grades. Gunning has pointed out that most magazines and newspapers attempt to keep the average sentence length between 15-20, and the per cent of pollysyllables between 5-9%. As it can be seen this has been done in the above samples. Thus, this low Fog Index would allow over 85% of our nation's adults to read the material with understanding. Job Corpsmen would need a minimum of a 6th grade level to handle this material adequately.

The Readability Analysis for The Money You Spend

Table 4, presents the data on the readability level of the reader, The Money You Spend. There are only three samples in this distribution in as much as the selections were very short and the entire selection could be analyzed in a short time.

The data reveal that the Mean sentence length for these three samples was 10.59. This is considerably less than the Mean sentence length in the previous reader. The Mean ffor the percentage of pollysyllabic words is 2.23, again lower than in the previous reader. The Mean Fog Index for this distribution was 4.2 which approximates the 4th grade level of readability. This is a full two grades below the first reader.

This particular reader qualifies for the following description as evidenced from the data: (1) It is written at the Easy Readability Range; (2) It is written in an easy style; (3) It is written in such a way that over 90% of our nation's adults could handle the material understandably; (4) Approximately 8% of our nation's adults would find this difficult reading. (5) Job Corpsmen would need a minimum of 4th grade reading ability to deal with the material comfortably.

What has caused this particular reader's samples to be at a lower readability level than those of the previous reader? Again the same two factors are at work. There were shorter average sentence lengths as well as a lower percentage of pollysyllabic words. These two factors combined to reduce the Mean Fog Index to 4.2, and Mean readability level to 4.3.

TABLE 4. READABILITY ANALYSIS FOR THE MONEY YOU SPEND

Sample Number and Page	Reading Level by Grade	Sentence Length	Per Cent of Hard Words	Fog Index	Percentage of Adults With This Education	Percentage of Adults Without This Education
1(2)	4	9.7	1.5	3.9	92	8
2(26)	6	14.0	2.4	5.6	88	12
3(46)	3	7.9	1.8	3.1	92	8
Mean	4.3	10.59	2.2	4.2	91	9

The Readability Analysis for the Job Sheets

Table 5, represents the data of the readability analysis for the various Job Sheets used in the vocational education program at Atterbury. Since each Job Sheet was so short an entire word count and computation was worked out on each sheet. Thus, the samples are in fact parametric measures since the whole universe has been sampled. Two of the Job sheets were from the Heating installation and service skills vocational program. The remaining three were from the Refrigeration Installation and repair skills vocational program.

Measured data shows that the Mean sentence length is 11.8, the Mean per cent of pollysyllables is 10.7, and the Mean Fog Index is 4.8 which approximates the 5th grade level of readability. Again there is a close correlation between the Fog Index and the grade level of readability, with the Mean readability level at 4.8. There is an unevenness in the per cent of hard words with samples 1 and 2, being out of proportion

to the rest of the samples. The computed Median is 14.0, and this probably represents a more accurate measure for this sample distribution in the per cent of hard words column.

TABLE 5. READABILITY ANALYSIS FOR JOB SHEETS

Sample Number	Reading Level by Grade	Sentence Length	Per cent of Hard Words	Fog Index	Percentage of Adults With this Education	Without this Education
1	5	12.8	4.0	5.2	92	8
2	6	14.0	4.9	5.8	88	12
3	4	9.2	15.7	3.7	92	8
4	4	10.0	15.0	4.1	92	8
5	5	12.9	14.0	5.2	92	8
Mean	4.8	11.8	10.7 *Md.=14.0	4.8	91	9

The reason there is such a low Fog Index Rating for the job sheets is based on the identical two factors isolated in the readers. There is a low average sentence length and reasonably low per cent of hard word count per 100 words. Thus, these job sheets qualify for the following description from the data: (1) They are written in the Easy Readability Range; (2) They are written in an easy style; (3) They are written in such a way that over 90% of our nation's adults could read the material easily; (4) Approximately 9% of the adults over the age of 25 would find difficulty with this material. (5) Job Corpsmen must have close to a 5th grade level of reading ability to handle this material easily and comfortably.

Table 6, presents the summary analysis of all data for both readers and all job sheet samples as they were tested.

TABLE 6. READABILITY ANALYSIS SUMMARY OF SUCCESS IN LANGUAGE/A, THE MONEY YOU SPEND, AND JOB SHEETS IN MEAN SCORE MEASURES

Source of Sample	Reading Level by Grade	Sentence Length	Per Cent of Hard Words	Fog Index	Percentage of Adults With This Education	Percentage of Adults Without this Education
*1	6.3	15.30	4.1	6.4	84	16
*2	4.3	10.59	2.2	4.2	91	9
*3	4.8	11.80	10.7 Md.=14.0	4.8	91	9

*1=Success in Language/A, Unit 3, "As A Matter of Fact"
*2=The Money You Spend
*3=Job Sheets

It may be seen that both readers and the job sheets are well within the range of elementary grades, with a grade range of only 1.5 grades. Thus the level of readability needed to understand these samples would be from the 5th grade through the middle half of the 6th grade. Job Corpsmen having already obtained grade levels 5-7 would have little difficulty in reading this material.

The evidence seems to indicate that short sentence lengths and a low percentage of words of three or more syllables has kept the Fog Index, and therefore the readability levels of these samples well within the elementary grade levels of readability. A reasonably consistent average sentence length approximately between 10-16 words per sentence seems desirable for this readability level. It may be noted that sentence length, in itself, neither hinders nor hurts the readability level

providing there is a reasonable average sentence length. The second factor, however, seems to be slightly more important as indicated by the data. Higher percentages of pollysyllabic words, per each 100 words, tend to raise the readability level immeasurably regardless of the shortness of the sentence.

Conclusions

The major purpose of this study was to determine the readability levels of curriculum materials being used in both the basic education program and the vocational education program at the Atterbury Job Corps Center. The Gunning Fog Index formula was applied to random samples from two readers from the basic education program and from five Job Sheets from the vocational education program. A detailed description of the readability instrument was provided. 9 samples of 100 words each were tested from Success in Language/A, Unit 3, "As A Matter of Fact." 3 selections from The Money You Spend were computed in their entirety since these selections were very short. 5 Job Sheets were sampled in their entirety since they, too, were very short.

Results of each readabilty analysis were tabulated, with a separate table for each reader and one table for the five Job Sheets. A summary table for all samples and universes was provided. Mean score for seven major categories were provided in the tables. The major conclusions were:

1. Samples from Success in Language/A showed a low

level of readability difficulty with the Mean Readability level at the 6th grade level.

2. Those sentences rated most difficult to read contained the longest sentences and had a reasonably high percentage of words of three or more syllables per each 100 word sample.

3. Those samples rated easy to read contained shorter sentences and had a lower percentage of pollysyllabic words per 100 word sample.

4. According to the 1960 census approximately 84 per cent of the adults over the age of 25, could easily read and understand the material in the samples from Success in Language/A.

5. According to the census approximately 16 per cent of the adults over the age of 25, could not easily read and understand this material.

6. Job Corpsmen having obtained the 6th grade level of readability would be able to read this material easily.

7. Samples from The Money You Spend showed a low level of readability difficulty with the Mean Readability level at the 4th grade level.

8. The selection with the highest Fog Index, and therefore considered the most difficult to read contained the longest sentences but had a low per cent of hard word count.

9. The selection with the lowest Fog Index, and therefore considered the easiest to read had the lowest average sentence length and the lowest per cent of hard word count.

10. Census figures would suggest that 91 per cent of the adults over the age of 25, could easily read and understand the material from this reader.

11. Approximately 9 per cent of the adults in the nation could not easily read the material.

12. Computation of the Job sheets showed a low level of readability difficulty with the Mean Readability level at the 4.8, or 5th grade.

13. The Job Sheet with the highest Fog Index, and therefore considered the most difficult to read contained the longest sentence length but contained a low per cent of hard words (words with three or more syllables).

14. The Job Sheet with the lowest Fog Index, and therefore considered the easiest to read contained the shortest average sentence length, but interestingly had the highest per cent of hard words per every 100 words.

15. According to the 1960 Census, 91 per cent of the adults over the age of 25, could easily read and understand the material from these Job Sheets.

16. 9 per cent of the adults over the age of 25 could not easily read the information in the Job Sheets.

17. Those Corpsmen having already obtained the 4.8 or 5th grade level of reading would be able to understand this material.

18. The data produced by the analysis made of these two readers and the five Job Sheets show that they are well within the readability levels of the elementary school grades.

Corpsmen having already obtained the 5th through 6th grade levels of readability should have little difficulty in comprehending this material.

19. The Fog Index Formula only measured the style of difficulty of these curriculum materials. It did not attempt to measure the "tone" (adolescent-centered vs. adult-centered needs) of the materials.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Flesch, R.F., "A New Readability Yardstick" Journal of Applied Psychology 32:221-233, June, 1948.

2. Flesch, R.F., How to Test Readability, Harper and Row., New York, 1949.

3.

3. Gunning, Robert, "Some Misconceptions About Readability," Editor and Publisher, 80:38, September 13, 1947.

4. Gunning, Robert, The Techniques of Clear Writing, McGraw-Hill, New York, 1952, 289 pp.

5. Klare, George R., The Measurement of Readability, Iowa State University Press, Amses, Iowa, 1963, 328 pp.

6. Klare, George R., and Buck, Byron, Know Your Reader, Hermitage House, New York, 1954, 191 pp.

7. Klare, George R., and Lauback, Robert S., What Readability Can Do For You, New Readers Press, Box 131, Syracuse, New York, 13210.

8. Tincher, E., Ross, F., Reynolds, S., and Simpkins, E., Success in Language/A, Unit 3, "As A Matter of Fact," Follett Publishing Company, Chicago, 1964, 160 pp.

9. Turner, Richard H., The Money You Spend, in the Turner-Livingston Reading Series, Follett Publishing Company in cooperation with New York University Press, Chicago, New York, 1962, 48 pp.

10. U. S. 88th Congress, Second Session, S. 2642: An act to mobolize the human and financial resources of the nation to combat poverty in the United States, Washington, D.C., 1964.

11. U. S. 88th Congress, Second Session, REGULATIONS applicable to the administration of Title II, Part B of the Economic Opportunity Act of 1964. Federal Registrar, March 17, 1965, 30 (51), 2531.

12. U. S. Department of Health, Education, and Welfare, Office of Education, Report of the task force on adult basic education instructional materials and related media. Washington, D.C., January, 1964. (dittoed)

13. Job Sheet, 960.1.J.S.75 from the Heating installation and service skills vocational program, Atterbury Job Corps Center, Indiana.

14. Job Sheet, 960,1.J.S.76, from the Heating installation and service skills vocational program, Atterbury Job Corps Center, Indiana.

15. Job Sheet, 950,3.J.S.2, from the Refrigeration Installation and repair skills vocational program, Atterbury Job Corps Center, Indiana.

16. Job Sheet, 950,3.J.S.5, from the Refrigeration Installation and repair skills vocational program, Atterbury Job Corps Center, Indiana.

17. Job Sheet, 950.3.J.S.6, from the Refrigeration Installation and repair skills vocational program, Atterbury Job Corps Center, Indiana.

THE LIBRARY OF
SEP 29 1967
CONTINUING EDUCATION